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Collective dissociative desorption of water molecules from glass produced by IFP-2000 flash tubes

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Abstract

When the radiation from an IFP-2000 lamp interacts with the surface crazed layer of glass, there is a weak spectral absorption not only in the vacuum ultraviolet but also in the range 420 >λ > 290 nm. The adsorbed H2O molecules are desorbed mainly by the dissociation, for the concentration of molecular hydrogen in the products is 80-84%. At intensities E≥600 W/cm2 and E≥4600 W/ cm2, in accordance with the working conditions, the desorption becomes collective. The rate of integral photon absorption then attains 1019 photons/cm2·sec. The transition to collective desorption in the first case (at relatively low intensity) is due to the production of a plasma in the material as a result of a sliding discharge struck at the surface of the glass. © 1981 Plenum Publishing Corporation.

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